

THE FIRST KNOWN EMBIOPHILE, AND A NEW CUBAN EMBIID

By J. G. MYERS, Imperial Bureau of Entomology, London.

(With one figure.)

One of the most remarkable features of all the better known insect societies is the presence of a varied assemblage of inquilines—known respectively as myrmecophiles, melittophiles, sphecophiles and termitophiles—entering into the most diverse relations with their hosts. So far as I know, the colonies, often very populous, of Embiids, have not hitherto yielded any guests. The present notes deal with a peculiar beetle which lives in Embiid nests in Cuba, and with the habits of its host, which I have been unfortunately compelled to describe as a new species. The observations were made while I enjoyed the privilege of an Atkins Harvard Fellowship at Soledad, Cuba.

In February a huge colony of *Oligotoma hospes* Myers (described below) was found at Soledad covering the trunk and larger branches of a large physic-bean tree (*Cassia fistula*). So far as could be seen it formed one continuous nest. At least the silk constituted a continuous mat, which could be peeled off in strips several feet long and of considerable thickness, with several superposed layers each containing numerous passages or tunnels. Friederichs considers the web is a protection against ants. In the present case ants were observed running in some numbers over the smooth outer surface, and it is probable they could not penetrate it.

In the thickest and most populous parts of the web several small black beetles were found. Some of these and of the Embiids were enclosed in a large glass vessel with a mass of their webbing and some bark, and were kept thus for a week. Unfortunately the large mass of material made it impossible to observe the insects; so this nest was broken up, the beetles running with great facility in the tunnels during the process. These and some of the Embiids were then placed in a large glass tube with two strips of fresh bark from the nest tree. The Embiids began at once to spin, in daylight, with an appreciable result in five minutes, and soon the pieces of bark were bound together and the spinners hidden between them. The next day the beetles were clustered at several places on the outside of the

nest—apparently never having entered it. On the third day the nest had become very compact, and the owners were rarely seen outside it. The beetles wandered actively over the nest, clinging to the webbing or to the exposed bark. A free Embiid from the original colony was dropped into the tube. It climbed about actively for nearly a day, but apparently could not gain entrance to the nest. At the end of the day it was dead, at the bottom of the tube.

The tube was kept in a vertical position. On the seventh day, for the first time, connecting webs were spun—a kind of scaffolding—across to the cork and the sides of the tube. The beetles then went up to the cork and rested on the new webbing there. They had not previously clustered in that position, though well able to climb up a glass surface.

It is apparent that the beetles enter into no very close relations with the Embiids, and that they are only facultative embiophiles is suggested by the discovery of one example under the bark of a guasima tree (*Guazuma tomentosa*) distant from a colony.

These beetles have been kindly determined by Mr. G. J. Arrow, of the British Museum, as *Hyporrhagus marginatus* (Fabr.), a Monommid (Monomatid, Tillyard) originally described from Cuba, but of which the British Museum has only examples from Santo Domingo.

It is a small black beetle 3.9 mm. long, with a greatest width of 2.1 mm. The whole form is very compact, the upper surface forming a continuous curve over pronotum and elytra. The surface is pitted but shining and very hard. The edges of the elytra are folded over laterally so as to clasp the sides of the abdomen. The antennae fold back under the lateral margins of the pronotum. The head itself in repose is retracted beneath the pronotum 'till it is barely visible in dorsal view. The legs all fold up in a truly remarkable way. The stout femora fit closely into individual grooves on the undersurface of the body, the tibiae folding under a knife-like ridge of their femora, and the tarsi folding back again beneath a similar tibial ridge, so that the claws just reach the sides of the body. Thus the legs, closely folded, lie flush with the rest of the strongly-armoured, evenly-rounded ventral surface of the body. The insect thus contracted may be turned this way and that without one finding the least salient point. It slips between the fingers like a wet apple pip.

When disturbed the beetles will occasionally "feign death" in the approved manner, the appendages being then closely folded as described. We are, however, perhaps not justified, with our present knowledge, in considering this behaviour, with the structures which make it possible, as especially correlated with the embiophilous habit, since both recur to a considerable extent in non-inquiline Byrrhidae.

The family Monommidae is a very small but widely distributed one, concerning the biology of which practically nothing is known. Dr. G. A. K. Marshall has been so good as to give me the following notes regarding it.

"Fletcher has bred numerous larvae (of a *Monomma*) from a rotting papaw stem. Champion collected all his Central American *Hyporrhagus* by beating herbage and dry twigs, except one species, which he took under fallen *Opuntia* leaves. Finally a North American species has been found in rotting *Opuntia* leaves."

***Oligotoma hospes*, sp. nov.**

Male, structure: Eyes not projecting much outside outline of head, their hind margins sinuate. Length behind eyes considerably greater than width between eyes, but about equal to width at antennae. Head strongly but gradually narrowed behind eyes. Pronotum considerably broadened posteriorly, its lateral margins slightly sinuate. Wings with the following cross-veins additional to those usual in *Oligotoma*—in forewings, one connecting radial sector with its fork, and one from this work to the media; in hindwings one or two from radial sector to its fork and one from that to media. Male genitalia as figured—first segment of left cercus considerably swollen, with its inner projection coarsely echinulate; right cercus normal.

Length: Excluding cerci, 8.75 mm., forewing, 8 mm.

Color: Dark brown, both wings with four pale lines.

Female: Paler in color and attaining a length of 25 mm.

Described from numerous examples of nearly all stages, Soledad, Santa Clara, Cuba, no. 523, J. G. Myers, 10, 11, 1925.

Holotype male in Museum of Comparative Zoology, Cambridge, Mass. (2 slides and 1 vial of alcohol). Numerous material of nearly all stages in the collections of M. C. Z. British Museum and the writer.

I leave to a specialist the task of describing in detail the female and the earlier instars.

This insect differs from all other *Oligotoma* species apparently, in the form of the first segment of the left cercus in the male, and in venation from all except the Cuban *O. venosa* Banks, which is a much smaller species with a simple left cercus. *O. hardyi* Friederichs, from Western Australia, has also unusually numerous cross-veins, a condition which Tillyard believes "to be correlated with the somewhat larger size and stronger build of this insect." That such a supposition is probably erroneous is indicated by the very small size (wing only 4 mm. long) of *Oligotoma venosa*.

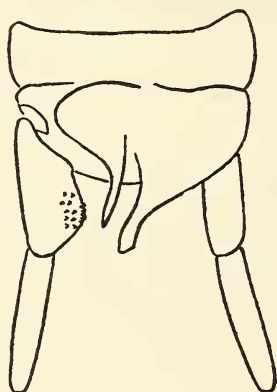


FIGURE I.

Oligotoma hospes, sp. nov., KOH preparation of tip of male abdomen, dorsal view. Chaetotaxy omitted, but consisting of long hairs.